

What is claimed is:

1. A waveguide optical amplifier, characterized in that a surface light emission source for pumping driven electrically is provided adjacently to and integrally with an optical waveguide doped with a light-emitting species, in the longitudinal direction of the optical waveguide.

2. A waveguide optical amplifier, according to claim 1, wherein the light-emitting species is a rare earth element.

3. A waveguide optical amplifier, according to claim 2, wherein the light-emitting species is erbium.

4. A waveguide optical amplifier, according to claim 1, wherein the surface light emission source for pumping is installed at least on one side of the optical waveguide.

5. A waveguide optical amplifier, according to claim 1, wherein plural surface light emission sources for pumping are installed around the optical waveguide.

6. A waveguide optical amplifier, according to any one of claims 1 through 5, wherein the optical waveguide is a planar optical waveguide.

7. A waveguide optical amplifier, according to any one of claims 1 through 5, wherein the optical waveguide is an optical fiber.

8. A waveguide optical amplifier, according to any one of claims 1 through 7, wherein plural integral sets, each consisting of an optical waveguide and a surface light emission source for pumping, are arrayed on a substrate.

9. A waveguide optical amplifier, according to any one of claims 1 through 7, wherein plural optical waveguides are arrayed on a substrate, integrally together with a common surface light emission source for pumping.

10. A waveguide optical amplifier, according to any one of claims 1 through 9, wherein the material of the optical waveguide(s) is silica-based inorganic glass.

11. A waveguide optical amplifier, according to any one of claims 1 through 9, wherein the material of the optical waveguide(s) is multicomponent oxide glass.

12. A waveguide optical amplifier, according to any one of claims 1 through 9, wherein the material of the optical waveguide(s) is inorganic fluoride glass.

13. A waveguide optical amplifier, according to any one of claims 1 through 9, wherein the material of the optical waveguide(s) is an organic polymer.

14. A waveguide optical amplifier, according to any one of claims 1 through 13, wherein the surface light emission source for pumping is an electroluminescent light source.

15. A waveguide optical amplifier, according to claim 14, wherein the electroluminescent light source is an inorganic electroluminescent light source.

16. A waveguide optical amplifier, according to claim 15, wherein the light-emitting species of the inorganic electroluminescent light source is ytterbium (Yb).

17. A waveguide optical amplifier, according to claim 15 or 16, wherein the inorganic electroluminescent light source contains neodymium (Nd) as a sensitizer.